ABSTRACT

Linear 1-butene dimers and other linear alpha-olefin dimers are manufactured in high yield and with high selectivity by coupling of alpha-olefins. The coupling is accomplished by contacting alpha olefins with an iron-based catalyst activated with an aluminum-based co-catalyst. The catalyst is structured to preclude formation of multiple dimer products, and the byproducts of the olefin coupling consist almost exclusively of methyl branched olefin dimers. The dimers have potentially diverse use in areas stretching form pharmaceuticals to plastics. Linear 1-butene dimers may be particularly useful in the production of plasticizer alcohols which may in turn be used to manufacture high quality plastics with reduced leaching.